

MIDWEST CENTER FOR OCCUPATIONAL HEALTH AND SAFETY

**SUMMARY ANNUAL REPORT
July 1, 2010 – June 30, 2011**

**NIOSH TRAINING GRANT
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**SUBMITTED BY:
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**MIDWEST CENTER FOR OCCUPATIONAL HEALTH AND SAFETY (MCOHS)
EDUCATION AND RESEARCH CENTER - UNIVERSITY OF MINNESOTA**
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Overview: The MCOHS (<http://www.mcohs.umn.edu>) continues to be extremely productive in a very supportive environment. There is extensive collaboration among disciplines, involving faculty, staff, students and external stakeholders engaged in teaching, research and outreach. Commitment to enhanced interdisciplinary involvement among the center programs further strengthens this center of excellence (<http://www.mcohs.umn.edu/>). The numerous funded active grants (n = 104, including 14 new grants), during the current period that supported student and faculty research, provided multidisciplinary opportunities for research training and dissemination of information through presentations, publications, and research-to-practice (r2p) efforts. There were a minimum of 91 publications, published or in-press involving one or more faculty members and students; (33 [36%] specifically involved students) and at least 125 presentations at local, regional, national, and international meetings by faculty and students (29 [23%] students). There were 50 MCOHS trainees during this reporting period (24 MPH, 7 MS, 1 MS MPH, 19 PhD), including 13 new students and 7 graduates (1 PhD, 1 MS, 1 MS MPH, and 5 MPH).

Centerwide Activities: The MCOHS leadership together with the Executive Committee, Center Advisory Board, faculty, staff and students continued to facilitate the Center's strategic plan. A new method in formative evaluation of students' progress, "E-Portfolios," was presented and implemented on a trial basis during the last reporting period; this is now being modified to more readily facilitate development and assessment of professional competencies in occupational health and safety among the current and future trainees. Dr. McGovern and alumna, Maura Boesch, DNP, MPH-MS, COHN-S collaborated with Midwest Center for Occupational Health and Safety (MCOHS) program directors and other faculty to pilot test a one-credit course designed to create awareness of the field of occupational health and safety and recruit students into MCOHS graduate training programs. The initial offering of PubH 7200, *Introduction to Occupational and Environmental Health and Safety, "Does the Shoe Fit?"* was implemented in spring 2011. The course participants were introduced to key concepts in hazard recognition, evaluation, and control in occupational health and safety applied to a manufacturing population and environment through lectures, discussion, a case study, and tour of a leather tannery and shoe manufacturing plant. The weekly PubH 8120 Occupational Health and Safety Research Seminar recently expanded to include all academic and research training programs in the MCOHS. This seminar facilitates progress on research efforts from initial study design and implementation to analyses and interpretation of data, by providing a forum involving students and faculty for presenting ongoing research, discussions and critiques, and practicing presentations of research results prior to professional meeting presentations. The MCOHS has initiated a fund development effort that, over the long term, will ideally provide further supplemental funding for trainees. The U of M Graduate School also provided matching money for three traineeships this year. Center and OIPRTP Advisory Board Member, Rick Pollock, is President-Elect of the American Society of Safety Engineers. **Pilot Research Projects:** Six projects have been selected by a Scientific Review Board; several are from outside Minnesota in MCOHS service-area states. Project selection has been made to enhance the possibilities of further collaboration and grant writing.

Interdisciplinary, Outreach, and Research-to-Practice (r2p) Activities: Numerous outreach activities continued during the year; examples included: 1) Efforts to increase interaction with Training Project Grant faculty, University of Wisconsin-Stout, to further enhance continuing education and outreach efforts. 2) The MCOHS Centerwide Seminar Series, led by Dr. Bruce Alexander, has been very successful in providing cutting-edge presentations that attract MCOHS students, faculty, staff, advisory board members, and others from the University, community, and region. 3) The MCOHS convenes a major NORA Symposium each spring that includes research poster presentations by students and faculty; in April 2011, Dr. Linda DeGutis, Director of the National Center for Injury Prevention and Control, provided the keynote presentation for this symposium, "From Research to Policy: Using Science to Inform and Design Effective Injury Control Policy." MCOHS faculty research funding provided numerous opportunities for interdisciplinary, outreach and r2p activities, both regionally and nationally, that are important to health and safety. Dr. McGovern, Ms. Ruth Rasmussen, MPH, MS, Anna Briggs, MPH (OHSRP doctoral trainee) and Dr. Alexander continue to collaborate with representatives of the Mountain and Plains ERC, NIOSH, and state health department partners in South and North Dakota to develop Indicators for Occupational Health Surveillance for the Dakotas as an outreach activity.

Recruitment and Diversity Efforts: Among 50 MCOHS registered students, students of color accounted for 28%. Integral to this increase are proactive strategies to ensure an inclusive, welcoming academic and work environment and emphases on both recruitment and retention. Dr. Gerberich, together with assistance from Mr. Rickey Hall, MCOHS Diversity Advisor, and Post-Doctoral Fellow, Dr. Starr Sage, developed a website link for MCOHS and the Environmental Health Sciences (EnHS) division on diversity information and resources that have been instrumental in attracting recent students (<http://www.mcohs.umn.edu/diversity/index.html>); this is frequently updated with involvement of the MCOHS Diversity Committee. The site provides information about on-campus, local, state, and national resources: funding; listservs; academic and social groups; various services; and statistics, among others. The MCOHS Diversity Committee has continued to meet to discuss and implement strategies for increasing program and all-center diversity, in consultation with the Executive Committee. Following the original baseline efforts, during the last reporting period, periodic surveys will be conducted to monitor perceptions of students, faculty and staff, pertinent to diversity issues that will, in turn, be utilized as a basis for future interventions, as appropriate. Faculty, students, and alumni continue to recruit locally and nationally at targeted

events and major professional meetings.

Industrial Hygiene (IH) Program: Gurumurthy Ramachandran, PhD, Director (Enrolled students: 8 MPH, 5 MS, 7 PhD; Graduates: 1 PhD) The overarching goal of the IH program is to provide a source of well-qualified, well-rounded professional industrial hygienists to meet the continuing needs of industry and society, both in the region served by the ERC and nationally. This period was very productive for the IH faculty and students in all categories: 28 peer-reviewed articles were published on various occupational health topics and 15 research presentations were delivered at several conferences, including the AIHCE in Portland, OR in 2011. One PhD student finished his dissertation during this period. Dr. Brosseau was elected to the position of Chair of the American Conference of Governmental Industrial Hygienists (ACGIH). The IH faculty has been very successful in obtaining external grants from federal, state, and industry sources that provide important opportunities for masters' and doctoral students to conduct research projects and to obtain funding as research assistants. The faculty has also been active in numerous outreach efforts, thus, increasing the visibility of the IH program as well as the MCOHS, overall. Four CE courses were delivered by IH faculty while the CE program within MCOHS delivered 6 IH courses that were taken by 161 participants.

Occupational and Environmental Health Nursing (OEHN) Program: Patricia M. McGovern, PhD, and Nancy Nachreiner, PhD, Co-Directors (Enrolled students: 6 MPH, 1 PhD; Graduates: 1 MPH) This program continues to provide excellent interdisciplinary education in occupational health and safety for nurses, with the goal of creating a cadre of OEHNs that will work to decrease the nation's burden of occupational illness and injury and protect the health of its workforce. Faculty and students contributed to 13 peer-reviewed publications and 16 research presentations at regional, national and international venues. Faculty accomplishments included: 1) Dr. McGovern was elected by Division of Environmental Health Sciences students as the 2010-11 Teacher of the Year. 2) Dr. Nancy Nachreiner serves on the Board of Directors for the Minnesota Association of Occupational Health Nurses (MAOHN). OEHN students who received national honors include: Catherine Graeve -- inducted into Delta Omega, the Honorary Public Health Society; and OEHN Advisory Board member and MPH alumna, Jean Bey, was named as a Fellow in the American Association of Occupational Health Nurses.

Occupational and Environmental Medicine (OEM) Program: Jeffrey H. Mandel, MD, MPH, Director (Enrolled students: 6 MPH; Graduates: 3 MPH) The OEM program continues to demonstrate successful achievement of its goal of training physicians to improve the health and safety of workers. This is accomplished among a range of practice venues, including government agencies, corporate health departments, clinical practice and academia. An ACGME required interim review of the program was conducted on August 29, 2011. New training opportunities, added in 2010, are going well (pulmonary clinical rotation, disability seminar). Dr. Pei Mi completed clinical training in June 2011. Three current residents (Summers, Gapuz, Devagagapthu) commenced the 2011-2012 practicum year and four new residents (Klingler, Modupeola, Olson, Potta) commenced in July and September 2011 and enrolled in MPH classes. A 7th resident (Dr. Paisley), accepted into the program as a PGY1 transitional intern in July 2011, will start the Occupational Medicine residency program upon successful completion of the PGY1 year. Multidisciplinary research activities have continued to evolve. Dr. Mandel is the PI for two multidisciplinary research efforts involving many other MCOHS faculty and students: 1) an investigation of health issues related to exposures in the taconite mining industry, including an assessment of risk factors associated with 63 cases of Mesothelioma and a cohort mortality assessment of 68,000 former miners. A cross-sectional screening of over 1800 current and former workers and their spouses has been completed (Drs. Mandel and Perlman, Co-Investigators). A comprehensive exposure assessment has been completed in conjunction with all of these studies, and includes the assessment of near-nano sized particles (Dr. Ramachandran). Collaborators include the University of Minnesota Natural Resources Research Institute (NRRI), a geological unit based at the Duluth campus, and the School of Engineering's Particle Technology Laboratory, involving seven MCOHS, School of Public Health and Medical School faculty, numerous professional staff, six graduate students and five NRRI faculty; 2) An assessment of a reported brain cancer excess within the research facility of a major company involved a research cohort mortality assessment (Drs. Alexander and Mandel, Co-PIs) and involved graduate students and faculty with backgrounds in occupational medicine, epidemiology, industrial hygiene and biostatistics. This investigation has been completed and reported to the company and its employees. Papers are in review for peer-reviewed publications, one involving the exposure assessment and another involving the results of the epidemiological investigation. Program faculty published 11 papers during this academic year; several additional papers are under review. OEM residents and faculty delivered over 45 presentations, including many that involved outreach activities.

Occupational Health Services Research and Policy Program (OHSRP): Patricia M. McGovern, PhD and Bryan Dowd, PhD, Co-Directors (Enrolled students: 7 PhD; Graduates: 0 PhD) The Divisions of Environmental Sciences (EHS) and Health Policy and Management (HPM), School of Public Health, offer this joint doctoral-level education program with the goal to prepare doctoral students with expertise in both occupational health and safety, and health services research and policy. Research efforts by faculty and students led to 14 presentations in academic and professional meetings and 14 peer-reviewed publications, including in-press manuscripts. The following awards/honors are noted: Professor Dowd was re-appointed to a second three-year term as Chair of the Methods Council, AcademyHealth; he has taped two webinars for the association: "Causality in HSR, Part I: An Introduction to Causal Concepts" and "Causality in HSR, Part II: Estimation Techniques for Causal Modeling." These webinars, explore multidisciplinary perspectives on causal modeling and offer practice advice for estimating causal models in Stata and LIMDEP, and are available to

students and faculty worldwide through AcademyHealth. Professor McGovern was appointed to the Executive Steering Committee of the National Children's Study (NCS) and selected as Co-Leader of a Collaborative Improvement Network developed by UCLA to pilot test an alternative recruitment strategy for the NCS. Professor Blewett was elected as a member of the Governing Board, AcademyHealth, and appointed by HHS Secretary Leavitt as a member of the Board of Scientific Counselors, National Center for Health Statistics, CDC, 2007 – Present. Professor Forster was invited as a member of the Tobacco Research Network on Disparities, funded by the National Cancer Institute, American Legacy Foundation, and as a contributing author for the upcoming Surgeon General's Report on Smoking.

Occupational Injury Prevention Research Training Program (OIPRTP): Susan G Gerberich, PhD and Bruce Alexander, PhD, Co-Directors (Enrolled students: 1 MS/PhD, 4 PhD; Graduates: 1 MS) This program rigorously trains doctoral-level academicians and researchers to provide leadership in reducing the burden of occupational injury through teaching, research, and translation of research to practice. The faculty has been funded for numerous research efforts (a minimum of 31) that provide multidisciplinary research-training opportunities for students, resulting in national and international professional publications (n=43 total; students = 14 [33%]), presentations (n=46 total; students = 19 [42%]), and r2p efforts. R2p efforts include: 1) Identification of risk factors for work-related physical assault against teachers/educators that are important in application of relevant interventions. Dissemination through peer-reviewed publications and presentations to key professional groups is integral to development of appropriate interventions. 2) Studies among agricultural household members on both agriculture and non-agriculture-related injuries, in five upper Midwest states, identified not only incidence and consequences of these injuries for all ages – but, also risk factors for agriculture-related injury among children; results have served as a basis for development of intervention efforts and dissemination to key professionals as well as the agricultural community; 3) Our research seminars, informal meetings and social interactions, involving OIPRTP students and those from several other MCOHS disciplines, are essential to the camaraderie that facilitates successful progress. **Student Awards/Honors**, included: Chia Wei, Nancy A. Robertson Endowed Graduate Fellowship in Injury Prevention; Katherine Schofield, Safety Memorial Scholarship - Associated General Contractors of Minnesota, 2009-2011 (based on outstanding academic record and career objectives); Christopher Drucker, University of Minnesota School of Public Health Medica Scholarship; **Faculty Awards/Honors:** Dr. Gerberich was invited to serve on the: Editorial Committee of *Epidemiologic Reviews* for injury and violence (2011 -); and the External Scientific Advisory Panel (ESAP) of the Center for Injury Epidemiology (CIE), Liberty Mutual Research Institute for Safety (2011); Dr. McGovern was appointed Bond Professor of Occupational and Environmental Policy; Dr. Nachreiner was elected Section Councilor in the Injury Control and Emergency Health Services Section of the American Public Health Association (2009-2012).

Hazardous Substances Academic Training (HSAT) Program: Peter Raynor, PhD, Director (Enrolled students: 4 MPH, 1 MS; Graduates: 1 MPH) The HSAT Program faculty and students collaborated on six peer-reviewed publications and 16 research-oriented presentations in a range of venues. Dr. Raynor continues working on a NIOSH R01 grant to study the use of sprays to control hazardous dusts in underground mines. He is also working on a NIOSH-sponsored project studying ways to assess the sizes of particles with which airborne viruses are associated. Dr. Raynor was the instructor for a "Hazardous Chemicals Science Review" for the North Suburban Hazardous Materials Response Team Training in Vadnais Heights, MN in December 2010 under the sponsorship of the Midwest Center's HST-CE program. He was promoted to Associate Professor with tenure at the start of the 2010-2011 academic year. Dr. Brosseau is presently Chair of the American Conference of Governmental Industrial Hygienists (ACGIH) Board of Directors. Her research includes NIOSH-funded projects on health and safety interventions in small business and on respiratory protection programs and practices in health care facilities. MPH student Melissa Balint graduated after completing her research project, "Comparison of the Within-Location Variability to the Between-Location Variability of Airborne Particle Concentrations in a Taconite Mining Operation;" an appendix summarized how hazardous taconite mine tailing waste is handled. MS student Joe Hexum is working on a research project titled "Analysis of Mouse Urinary Protein Data at University of Minnesota Research Animal Resource Facilities" to evaluate control measures used to reduce worker exposure to mouse urine proteins when bedding is disposed in research facilities.

Continuing Education and Outreach (CE) Program and Hazardous Substances Training Continuing Education (HST-CE), Ruth Rasmussen, MPH, MS, RN, Director; TOTAL for 2 Programs, CE and HST-CE = 94 courses involving 3,961 participants [2,048 participants in online modules awarding CE credit; 1,913 in-person course participants] representing occupational health and safety professionals across disciplines. The CE Program includes the HST-CE program. The CE Program continued to strengthen collaborations with the Wisconsin State Association of Occupational Health Nurses and the local chapters of the American Industrial Hygiene Association and the American Society of Safety Engineers by co-sponsoring regularly scheduled professional development programs and events. Geographically, MCOHS CE programs extended to 48 states and 66 countries with 73% of our onsite participants and 28% of our online course participants representing Minnesota and regional states of North Dakota, South Dakota and Wisconsin and 27% of our onsite and 72% of our online course participants representing other states and countries.

Summary: The Midwest Center for Occupational Health and Safety continues to be highly productive and provides important contributions to the nation's workforce safety and health. Innovative research strengthens visibility of the MCOHS at the regional, national, and international levels and provides a basis for translating research to practice. Excellent quality interdisciplinary academic

and research programs, recognized globally, provide a strong foundation for student training and novel continuing professional education and outreach efforts that serve the needs of a diverse workforce in the Midwest.